

CLAIMS

1. An optical disk apparatus having a laser light source, a light receiver for reproducing signal for receiving a reflective light from an optical disk of a laser beam by that said laser light source irradiated the optical disk and converting it into an electric signal, a light receiver for monitoring light source for detecting said laser beam from said laser light source, and a light separator for distributing said laser beam from said laser light source toward said optical disk and said light receiver for monitoring light source and reflecting said reflective light from said optical disk toward said light receiver for reproducing signal, wherein:

transmittance and reflectance to the S polarization and the P polarization of said light separator are adjusted so that a first polarization component level ratio being the ratio of the level of a component corresponding to the TE component to the level of a component corresponding to the TM component of said laser beam by that said reflective light from said optical disk was received by said light receiver for reproducing signal from said laser light source via said light separator, and a second polarization component level ratio being the ratio of the level of a component corresponding to the TE component to the level of a component corresponding to the TM component of said laser beam by that said laser beam from said laser light source was received by said light receiver for monitoring light source via said light separator become equal or the difference between the first and the second polarization component level ratios becomes within a predetermined permissible range; and

the difference between a laser noise component received by

said light receiver for reproducing signal and a laser noise component received by said light receiver for monitoring light source after said adjustment is obtained, in order to obtain a reproducing signal in that a desired amount of laser noises were canceled out.

2. The optical disk apparatus according to Claim 1, wherein; the necessary value of a laser noise canceled amount N_a is represented so that said difference between the first and the second polarization component level ratios becomes within said permissible range, by the following expression of relation:

$$[\{2(1-\cos(\text{Arctan}(1/(\text{LDp} \cdot \text{RFpo})) - \text{Arctan}(1/(\text{LDp} \cdot \text{FPDpo}))))\}^{1/2} \leq N_a \quad \dots (1)$$

however,

N_a : the noise level after laser noise cancel/the noise level before the laser noise cancel,

LDp : the ratio of the level of TE component to the level of the TM component of the laser beam emitted from said laser light source,

RFpo : the ratio of the transmittance of a component corresponding to said TE component to the transmittance of a component corresponding to said TM component of said laser beam from said laser light source to said light receiver for reproducing signal, that is determined by said light separator existing on the optical path between said laser light source and said light receiver for reproducing signal,

FPDpo : the ratio of the transmittance of a component corresponding to said TE component to the transmittance of a component corresponding to said TM component of said laser beam from said

laser light source to said light receiver for monitoring light source, that is determined by said light separator existing on the optical path between said laser light source and said light receiver for monitoring light source.

3. The optical disk apparatus according to Claim 1, wherein; said light separator is a polarization beam splitter.

4. The optical disk apparatus according to Claim 1, wherein; in said light separator, said transmittance to said S polarization is set at 0%, and said reflectance to the above S polarization is set at 100%, and also said transmittance to said P polarization is set at 90%, and said reflectance to the above P polarization is set at 10%.

5. An optical disk apparatus having a laser light source, a light receiver for reproducing signal for receiving a reflective light from an optical disk of a laser beam by that said laser light source irradiated the optical disk and converting the reflective light into an electric signal, a light receiver for monitoring light source for detecting said laser beam from said laser light source, and a light separator for distributing said laser beam from said laser light source toward said optical disk and said light receiver for monitoring light source and reflecting said reflective light from said optical disk toward said light receiver for reproducing signal, wherein:

a polarizer for passing through either one of the TE component and the TM component of said laser beam emitted from said laser light source is provided between said laser light source and said light separator;

by said polarizer, transmittance and reflectance to the S polarization and the P polarization of said light separator are adjusted so that a first polarization component level ratio being the ratio of the level of a component corresponding to the TE component to the level of a component corresponding to the TM component of said laser beam by that said reflective light from said optical disk was received by said light receiver for reproducing signal from said laser light source via said light separator, and a second polarization component level ratio being the ratio of the level of a component corresponding to the TE component to the level of a component corresponding to the TM component of said laser beam by that said laser beam from said laser light source passed through said light separator and said reflective light from said optical disk was received by said light receiver for monitoring light source become equal or the difference between the first and the second polarization component level ratios becomes within a predetermined permissible range; and the difference between a laser noise component received by said light receiver for reproducing signal and a laser noise component received by said light receiver for monitoring light source after said adjustment is obtained, in order to obtain a reproducing signal in that laser noises were canceled out.

6. The optical disk apparatus according to Claim 5, wherein; said light separator is a polarization beam splitter.